

ABSTRACT

The present invention includes a nuclear fission reactor apparatus and a method for operation of same, comprising: a core comprising a fissile metal hydride; an atmosphere comprising hydrogen or hydrogen isotopes to which the core is exposed; a non-fissile hydrogen absorbing and desorbing material; a means for controlling the absorption and desorption of the non-fissile hydrogen absorbing and desorbing material, and a means for extracting the energy produced in the core.